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ABSTRACT

A cross-cultural educational research study involving 12,500 students in 13 countries is described, with particular emphasis on one aspect of geographic literacy--place vocabulary skills. Place vocabulary is defined as that component of vocabulary that is concerned with places which are proper nouns and capitalized to show their importance. The underlying premise of this study was that an effective knowledge of place vocabulary is a prerequisite for good citizenship and for making intelligent political and economic decisions. Project developers believe that, while place is a central consideration for geographers, little research has been directed toward what constitutes a working and effective place vocabulary for good citizenship or toward the way in which such a vocabulary is acquired. To provide feedback on place vocabulary capabilities of junior high school students in various parts of the world, a test instrument, The World Basic Place Vocabulary Test, was developed. All 50 test questions dealt with large and populous countries (over four million population and at least 50,000 square miles). Findings from analysis of test scores indicated that students in developing countries generally scored lowest, students in Europe outperformed those in North America, students who studied geography as a separate subject performed better than those in an integrated social studies course, boys in all countries performed better than girls, and students generally knew less about place names than geographers and teachers thought they knew. The conclusion is that educators should focus more attention on improving the knowledge store of adolescents regarding place vocabulary. The document includes appendices which contain copies of the map and test questions and a table indicating the range of scores. (DB)

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THE USE OF FORMATIVE TESTING IN DIAGNOSING PLACE VOCABULARY CAPABILITIES: A CROSS-CULTURAL EXAMPLE.

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The World Basic Place Vocabulary Test was designed to provide feedback on the place vocabulary capabilities of thirteen-year-old students in various parts of the world. The results from 12,500 students in thirteen countries indicate that this knowledge store is not very great. More research attention needs to be given to the role of memory in developing place vocabularies, particularly the structured sequences which aid the encoding process.

THE USE OF FORMATIVE TESTING IN DIAGNOSING PLACE VOCABULARY CAPABILITIES A CROSS-CULTURAL EXAMPLE

The geographic illiteracy of U.S. students has frequently been lamented and occasionally it has been documented. (Appendix A). The movement in the 1960's which focused on teaching by conceptual approaches and inductive reasoning, characterized by the High School Geography Project, was one effort to combat this illiteracy. This gave way in the 1970's to research emphasis replicating the work of Piaget and to studies of perception. Throughout this time little or no attention has been given to the development of place vocabulary skills, probably due in part to an educational pendulum-swing away from the memorization of place names which long ago characterized geography teaching.

The Place Vocabulary Research Project, begun in 1976, is an effort to bring new attention and understanding to a fundamental facet of geographic learning. Vocabulary development is intrinsic in the learning process. The nuances and meanings which we attach to words give richness and depth to our understandings. A place vocabulary differs

from other vocabulary only in that it is concerned with places which are proper nouns and capitalized to show their importance. While place is a central consideration of geographers, little research has been directed toward what constitutes a working and effective place vocabulary for good citizenship, or how such a vocabulary is acquired. Few would claim that intelligent political and economic decisions can be made without a knowledge of the places involved.

When indicating the new direction in educational research, Benjamin Bloom called for formative rather than summative testing [3]. Summative tests are administered mainly to rank or categorize students. Formative tests are used to diagnose learning difficulties. By providing feedback, the information from formative tests can become a part of the learning process. Students and teachers alike can be guided toward new avenues to explore, or to areas where remedial work is needed. This is the intent of the World Basic Place Vocabulary Test developed by this research project.

While this study has been a long-term interest of the primary researcher, it was inspired and stimulated by contacts made during the International Geographical Congresses in Montreal in 1972 and Moscow in 1976. The major work was done in the period between the Moscow meeting and the

1980 I.G.U. Congress in Tokyo.

The project became a cross-cultural study involving 12,500 students in thirteen countries in each of the continents. Since the ability to perform on the place vocabulary test is a function of past experiences, a cross-cultural study could yield information relative to the effectiveness of various types of school systems and the role of a society's values in developing place-location knowledge and skills [9, p. 86]. The interpretation of this information could lead to insights regarding effective practices for improving students' place vocabularies.

An initial consideration in developing a test to be used in many nations was to make it as free from cultural bias as possible [4, p. 281]. A team of country coordinators assisted in formulating and administering the test. The selection of the Meridian Map on an oval projection developed by Lawrence Fahey, the project co-director (Figure 1) was an early decision. On this map the outline of the continents is familiar enough to be universally recognized. One possible shortcoming was a centering near the Prime Meridian, but this apparently did not present any appreciable difficulty.

In recent years, U.S. research in geographic education has tended to focus on large-scale mapping activities [19]. Small-scale maps are remote from a student's immediate

environment and require not only symbolic representation but an intellectual hurdle in comprehending the compression of space [2]. Entire countries may scarcely be visible on small-scale maps.

The choice of names to include on the test for measuring place vocabulary had to be on a rational basis and also had to be free from cultural bias. At first the names of mountain ranges and rivers were included, but this led to clutter and obfuscation, and these will have to be the subject of another test at another time. Five oceans and seas were selected which were readily identifiable and provided information as to whether students could separate land and water on a black and white outline map.

Countries of over four million population and 50,000 sq. mi. (1,295,00 km^2) were included on the test [Figure 2]. The largest cities in Africa, South America and North America, and the three largest cities in Europe and Asia were added for a total number of fifty test items. This did not include all of the most visible cities in the Owen and Mason study which showed that Saigon was much more visible than Calcutta, but the cities on the test all appeared in the visibility list except for the United States and Canada cities which were not part of their study [15].

A problem for cross-cultural research is in choosing a model of intelligence which will facilitate meaningful

comparisons [13, p. 113]. The Place Vocabulary Research Project used subjects of thirteen years of age in order to reach students before school-leaving age and to tie in with other cross-cultural studies [22]. Also, students at this age have generally reached the Euclidean stage where spatial comprehension matures, and they are able to describe position and form accurately [6].

The findings were presented in a full report to the Commission on Education of the I.G.U. [18]. By way of summary, the range of scores for the various countries is shown in Figure 3. The developing countries generally scored low, and this may be attributed in part to the lack of materials and the poor preparation of teachers due to financial difficulties. As might be expected by those familiar with the teaching of geography in Canada and the United States, the Canadian students ranked higher, although there was considerable variation among the provinces and states. European students outperformed those in North America, but most interestingly, in light of Polish jokes which circulate in the U.S., the highest scores were turned in by Poland. Further studies are planned in other East European and communist countries to see if a pattern emerges. Some of the country coordinators were able to demonstrate statistically that students who take geography as a separate subject performed better than those in an integrated social

studies curriculum.

Item analysis reflected the obvious conclusion that some places are better known than others [5, p. 158]. A major clue in recognizing countries is their shape [8, p. vi, 1, 110]. Development of the perception of form and memory for form has been investigated by Zusne [23]. Teachers have long been aware that peninsular places like Italy and Florida, and attenuated countries like Chile, are more quickly learned and retained than countries with less distinguishable shapes.

Although some country coordinators were surprised that boys performed better than girls on the place vocabulary test, these findings were consistent with other spatial tests reported by I. MacFarlane Smith [20, p. 255]. Recent studies at Johns Hopkins University also indicate that boys have a higher math aptitude than girls [1]. Whether or not the causative factors in this differential are innate, or culturally determined, is an open question; but the existing differences should be recognized.

Data collected on the effects of television were inconclusive. What was apparent is that students around the world, with the exception of places like India, are spending many hours a week in front of a television set.

Travel experiences would seem to contribute to a knowledge of place, but this was not always demonstrated. This

is probably due to the fact that vicarious travel through reading and films was not measured. If students who travel reflect a higher economic status, they would be expected to have a higher test score, but in some instances the travel was from a lower class of migratory laborers.

These various correlations, while interesting, should not detract from the major purpose of this study. Milton and Martin have pointed out that psychological research has gone through a period of excitement and discovery that must have important consequences for the application of the science of human learning and memory to the control of learning in educational settings [14, p. xi]. Geographers and educators for more than a generation have been denigrating memory, but research into encoding, storage, retrieval and brain functions is calling for new attention to the role of memory in the learning process.

In writing about cognition and effect, Tomkins has stated:

> If memorizing is a technique of learning to remember, we must expect the same variability that is characteristic of any learning sequence, consisting of differences among people and differences in the material they are trying to memorize. *The greatest source of variability, however, will result from differences in the*

intention to memorize ... (italics mine)

> It is our belief that the human being does in fact constantly maximize his ability to remember by organizing ongoing experiences into categories he already knows and thus reduces the amount of new information he must remember [21, pp. 64-65].

Thus, if place vocabulary is largely ignored in the curriculum and by teachers, then the student is not likely to make the conscious effort to store place names in his long-term memory. Furthermore, unless these terms are introduced in a structured sequence of expanding interrelationships and associations, the encoding process will be hampered. This is why the continents should be taught by the fourth grade (nine years of age) to most students.

Teachers should also be aware of "paired-associate learning" in developing place vocabularies [12, p. 179]. This is especially true for learning cities, as in Cleveland --- Ohio or Rio de Janerio --- Brazil. Results from the place vocabulary test indicate that these associations have not been made by large numbers of students.

One of the most intriguing aspects of place vocabulary development is that it often involves pairing a shape with a verbal representation, and thus involves the use of both sides of the brain. Spatial recognition and recall functions

are mainly concentrated in the right temporal lobe which counterbalances the massive involvement of the left temporal and parietal lobes in linguistic performance [17, p. 341].

The effects of rehearsal or repetition on memory is somewhat a matter of debate among educators and psychologists. Gagné indicated that investigators were shifting from a connectionist view of learning to an information processing view. He suggested that "spaced reviews" could have a significant effect, but the prior learning of prerequisite capabilities was the major factor in learning [10]. Craik and Lockhard felt that rates of forgetting are a function of the type and depth of encoding [7].

Time and space restrictions do not permit elaboration on memory theory or a consideration of topics such as processing time or incidental learning as these relate to place-vocabulary development. My hope is that the research areas opened here are of sufficient interest that others will wish to pursue these studies further. As Hart has indicated, any person wishing to research the development of children's place cognition should recognize the crucial significance of being able to apply a name to a place [11, p. 150].

I have no quarrel with the definition, "a place is a piece of the whole environment that has been claimed by feelings" [16, p. 9]. What must be recognized, however, is that motivation and emotion involved in affective learning

are integral parts of the encoding, storage, and retrieval processes in long-term memory.

Everything we know about the world is stored in our long-term memory, yet, each piece of it can be reached by a multitude of pathways [12, p. 18]. Unfortunately, the results from the World Basic Place Vocabulary Test indicate that this knowledge store is not very great for most thirteen-year olds around the world. Further studies are being made in other culture areas and at other levels of maturity. Investigations are also underway to identify factors which lead to the acquisition of a well-rounded and fluent place vocabulary.

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Appendix A

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Attention is also called to the work of Elaine F. Bosowski at the University of Colorado on "Children's Images of the World" which was reported at the 1980 N.C.G.E. Annual Meeting in Des Moines.

Figure 1.

PLACE VOCABULARY PROJECT
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Prof. Robert N. Sevelarid
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Figure 2.

PLACE VOCABULARY PROJECT

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ITEM ANALYSIS

Place _____

Country _____

School _____

Date _____

Total number of students tested _____.

Record the number of errors for each question:

Oceans and Sea (numbers 1 - 5)

___ Arctic Ocean
___ Atlantic Ocean
___ Caribbean Sea
___ Indian Ocean
___ Mediterranean Sea

Countries (numbers 6 - 37)

___ Algeria
___ Argentina
___ Australia
___ Brazil
___ Canada
___ Chile
___ China
___ Colombia
___ Cuba
___ Egypt
___ Ethiopia
___ France
___ India
___ Indonesia
___ Iran
___ Italy
___ Japan
___ Mexico
___ Nigeria
___ Peru
___ Philippines
___ Poland
___ Saudi Arabia
___ South Africa
___ Spain
___ Sweden
___ Turkey
___ United Kingdom
___ USSR (Soviet Union)
___ United States
___ Yugoslavia
___ Zaire

Cities (numbers 38 - 50)

___ Buenos Aires
___ Cairo
___ Calcutta
___ Johannesburg
___ London
___ Mexico City
___ Moscow
___ New York
___ Paris
___ Peking
___ Rio de Janeiro
___ Sydney
___ Tokyo

Figure 3.

RANGE OF SCORES

Country	0-10	11-20	21-30	31-40	41-50	mean score
Canada	9.5	21.7	27.5	23.8	17.5	26.4
U.S.A.	15	25	22	21	14	24.7
Mexico	14.1	30.8	29.7	18.2	7.2	23.3
Venezuela	30.3	25.7	24.2	13.3	6.5	19.5
Brazil	42.4	24.8	13.0	13.4	6.4	13.7
Norway	9.0	13.2	14.6	20.2	43.1	33.5
Ireland	12.0	12.9	29.7	26.0	19.4	28.34
Netherlands	11.5	15.3	19.1	24.7	29.5	30.3
Poland	.99	1.3	10.3	15.6	71.8	**
Nigeria	33.0	29.3	28.3	7.4	2.0	16.1
India	6.7	12.0	34.3	29.1	17.9	**
Japan	20.6	35.7	23.7	12.5	7.7	20.6
New Zealand*	3.7	15.7	17.0	34.3	29.6	32.3
International School, Iraq*	11.1	7.4	7.4	25.9	48.2	35.4

*limited sample
**because complete data has not reached the U.S., mean scores cannot be computed on the same basis as for other countries

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